Case Report

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Radiological analysis and postoperative evaluation of multilocular ameloblastoma in young patient through panoramic radiograph: a case report

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Abstract

Objective: Radiographic examination is the main supporting modality in helping to establish the diagnosis of lesion in the jaw. This paper aimed to describe how panoramic radiograph used to analyze the diagnosis and evaluate the results of treatment of ameloblastoma lesions.

Methods: Panoramic radiographic examination was performed on an 18-year-old female patient with a chief complaint of swelling of the left mandible which caused the asymmetrical face. In addition to panoramic radiographs, CT scans were also added.

Results: Radiograph panoramic showed a sizable well-defined multilocular radiolucency in left mandibular body area to the ramus extend to incisura of the mandible. The lesion border had curved - corticated and scalloped border. The internal structure of the lesion was totally radiolucent with the presence of internal septa creating multilocular appearance. Effect the lesions on surrounding structures was destruction inferior cortical of mandible and root resorption. 3-dimensional CT scan was also performed and showed a pattern of lingual and buccal cortical involvement. Based on clinicoradiograph pattern this lesion was diagnosed as ameloblastoma.

Conclusion: Panoramic radiographic examination is an important modality not only to help establish the diagnosis of ameloblastoma but also can be used to evaluate the results of lesion elimination by surgical intervention.

Keywords: Multilocular ameloblastoma, Panoramic radiograph, Postoperative evaluation

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Introduction

Ameloblastoma is one of the benign epithelial odontogenic tumors. Although it is a rarity, this tumor represents 1% of all oral epithelial tumors and most common of odontogenic tumors with percentage 30-58%. It was recognized in 1827, first described in 1868 as adamandine epithelioma but still has many controversies about its origin and synonym. Then, the term of ameloblastoma was 1930. Ameloblastoma is a true neoplasm which originated from the odontogenic epithelium such as enamel organ, remnants of dental lamina, epithelium of dentigerous cyst or from the basal layer of the oral mucous epithelium. Ameloblastoma is a slow-growing tumor and locally aggressive.[1-5] The etiology of this tumor is still unclear, but the recent studies reveal that mutations in genes of the MAPK pathway have been inspected in almost 90% of all ameloblastoma cases and BRAF V600E is the most common and not present in other odontogenic tumors.[6-10]

In general, ameloblastomas show slow and painless expansion swelling but can be causing expansion of the cortical bone, perforation of the lingual and/or buccal plates and infiltration of soft tissue. Clinically, the mucosa over the mass of ameloblastoma is normal, but teeth in the involved area may be mobile or displaced. Because they are slow-growing, patients with these lesions usually notice the presence of abnormal enlargement condition achieved and gradually increasing facial asymmetry. The most common site of this lesion is the posterior area of mandible with 70% of them developing in the molar-ramus area and only rarely the maxilla and the soft tissue.[1,6,11-13] The global incidence rate of ameloblastoma is 0.92 per 1.000.000 person-years based on a systematic review and meta-analysis. There was male predominance reporterd from all ameloblastoma cases with male/female ratio of 1.14:1. Ameloblastoma has a peak incidence in the third and fourth decade of life but can found in any age group with a mean age of all cases is 34.3 years. Ameloblastoma has a high recurrence after removal but rarely metastasizes.[2,4]

Histologically, ameloblastoma may be unicystic or multicystic.[1] World Health Organization (WHO) in their 4th edition classification of head and neck tumors was 'reclassified' the odontogenic tumors, including ameloblastoma. Ameloblastoma which was previously classified into four types that are solid/multicystic, extraosseus/peripheral, desmoplastic and unicystic, underwent a classification change divided into conventional ameloblastoma, extraosseus/peripheral ameloblastoma, unicystic ameloblastoma and metastasizing ameloblastoma. The term solid/multicystic was dropped because

ameloblastomas have different histopathologic types, including follicular, plexiform, acanthomatous, granular cell, basaloid, and desmoplastic.[6,7]

Radiological features of ameloblastoma may be unilocular or multilocular with internal structure varies from totally radiolucent appearance to mixed radiolucent-radiopaque with the presence of bony septa creating internal compartments. These septa can be straight but are more commonly coarse and curved and originate from the normal bone that has been trapped within the tumor. The margin of the lesion is well defined and mostly depicted by a cortical or sclerotic border. The border can be smooth-curved or scalloped.[1,11] Most of ameloblastoma cases present as a multilocular lesion than the unilocular one, and that forming certain characteristic pattern. This pattern developed by internal septa which remodeled by internal cystic component of the tumor into soap-bubble appearance, spider-web like, and honeycomb. The characteristic type of radiological appearance was described by HM Worth.[5,15] Previously, the unilocular and multilocular radiograph appearance of ameloblastoma was always represented with unicystic and multicystic histological character, but some cases showed the unicystic ameloblastoma provide a multilocular appearance as in the case report.[14,16]

Effects of ameloblastoma on surrounding structures are root resorption when the lesion involving the toot root, tooth displacement when the lesion abuts the crown, expansion and thinning of an adjacent cortical plate. The unicystic types may cause extreme expansion of the mandibular ramus, and often the anterior border of the ramus is no longer visible in panoramic radiograph. There main differential diagnosis of ameloblastoma in radiological approach is dentigerous cyst and odontogenic keratocyst. Small unilocular ameloblastomas can be similar and difficult to distinguish from dentigerous cysts when they are located around the crown of unerupted teeth. Odontogenic keratocyst (OKC) may be very similar to ameloblastoma but in OKC usually tends to grow along the bone without marked expansion. Ameloblastomas spread slowly by infiltration through the medullary spaces and may erode cortical bone; therefore, their radiographs often show expansion of the cortical plates. Internal septa in OKC is uncommon and the expansion was smaller than that of ameloblastomas, although some multilocular cases showed large expansion and some showed lingual expansion and perforation. Several treatment modalities have been tried to ameloblastoma such as curettage and enucleation (conservative management), marsupialization, chemical or electro cauterization, en bloc excision, and radical resection.[11,17-20]

Case report

An 18-year-old female patient reported to the Oral and Maxillofacial Surgery of Hasanuddin University Dental Hospital with a chief complaint of swelling on the left side of lower face since approximately last two years. The general health and medical history of the patient were unremarkable. Extraoral clinical examination of the patient showed facial asymmetry due to considerable painless swelling figure 1. On intraoral examination found swelling with a less clear boundary of the second premolar region and extend to the posterior area of the left mandible, no abnormalities in overlying mucosa, and lymph was not palpable.

Radiograph panoramic showed a sizable multilocular radiolucency in left mandibular body area to the ramus extend to incisura of the mandible figure 2. The lesions border was well-defined and had curved-corticated and scalloped border. The internal structure of the lesion was totally radiolucent with the presence of internal septa creating multilocular appearance. The septa appear to form a typical pattern of ameloblastoma, which is soap bubble pattern or spiderweb pattern. Because the lesion was extended to the ramus and incisura of the mandible, then the anterior border of the ramus of the mandible is no longer visible. Not only extended to the posterior area of mandible, the lesion also appear to extend into the inferior cortical mandible with an invasive destruction pattern which causes irregular cortical thinning of the mandible. Root resorption was also seen in teeth 37 and 38 in this case. In this case, a 3-dimensional CT scan

Figure 1 **Extraoral examination shows facial asymmetry in the left mandibular area**

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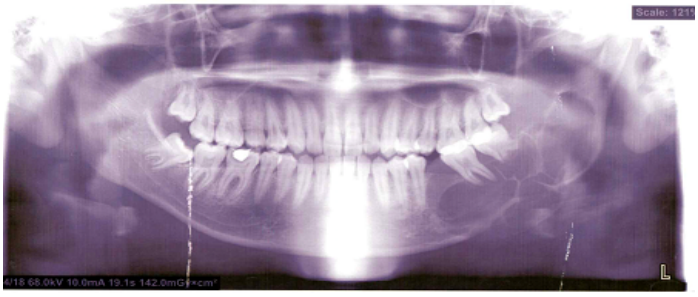

Figure 2 **Initial panoramic radiograph shows well-defined multilocular radiolucency with scalloped-corticated border from the left body of mandible extend to the ramus**

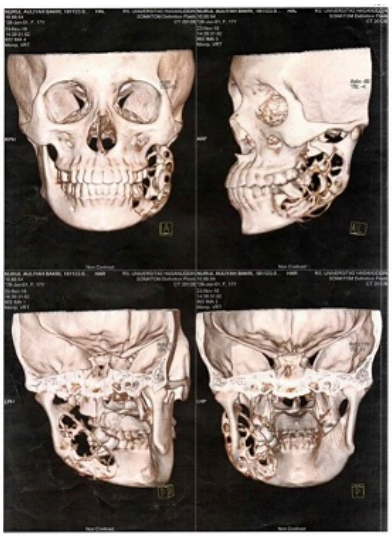

Figure 3 **3D View of CT Scan show extension of the lesion to the buccal and lingual cortical plate**

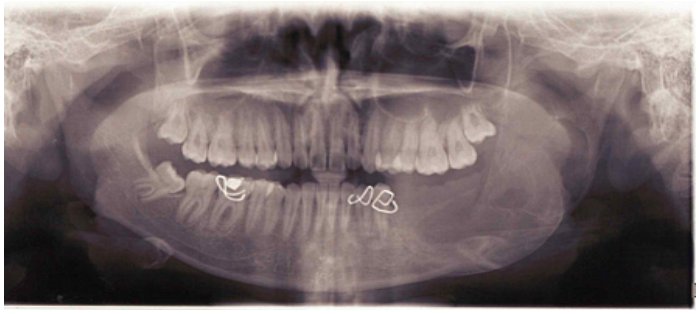

Figure 4 **One month postoperative panoramic view with obturator in the post-dredging cavity**

Based on clinical and radiograph examination the lesion was diagnosed as multilocular ameloblastoma. The management of this case by a team of oral surgeons is two times dredging at five-month intervals. Tooth extractions 37 and 38 were also performed. Panoramic examinations were also carried out twice, one month and two months after surgery to see patterns of bone repair. Histopathological examination in the form of a biopsy is done after the first operation to examine the remnants of tumor tissue. For one month postoperatively, panoramic examination showed radiolucent areas (in the form of post-dredging of lesions) on the body to the ramus of the mandible and edentulous post-extraction 37 and 38 together with dredging; bilateral radiopaque shadows are also seen in the form of clamps that function as an obturator placed on the patient figure 4. Fort two month postoperatively, panoramic radiograph showed bone repair in the post-operative area getting better with the shrinking of the radiolucent area and the start of new bone formation from the inferior direction of the mandible figure 5. These two panoramic examinations were carried out before the second dredging plan and confirmation of the histopathological examination. From the results of the histopathological examination.

Discussion

In this case, multilocular radiolucent lesion was seen in the region of the body to the ramus of the mandible which was well-defined with corticated border and showed an internal septa pattern resembling soap bubble or spider-web. The multilocular radiolucencies appearance outnumbered unilocular one based on some studies also seen in this case. According to Vohra et al. and More et al., this shows the radiographic features typical of ameloblastoma in the form of distinctive patterns and occur in the ramus area that is most frequently involved.[1,13]

In this case, ameloblastoma lesions were found in female patients aged 18 years. From the history taking, the patient's nutritional condition was good and came from a well-off family. This is in accordance with a systematic review from Hendra et al. that ameloblastoma can occur at any age, although at a young age it is very rare. In contrary with the case, according to Richard et al. in 1995 ameloblastoma can appear at a young age more in developing countries possibly related to premature aging due to malnutrition and lack of access to health services.[2] From the results of history taking, there is a family history of the tumor from the patient's father. further research is needed regarding the relationship between the occurrence of ameloblastoma with heredity.

Dredging is enucleation followed by bone curettage in ameloblastoma lesions with a success rate of 60% and is carried out within 2-3 months to accelerate bone growth but has a large recurrence risk, so it must be monitored through radiographic examination to assess bone formation that fills the dredging cavity.[21] In the management of this

Figure 5 **Two month post-operative panoramic view shows bone repair in post-dredging cavity**

multilocular ameloblastoma case the oral surgery team chose the dredging method by considering the age of the young patient and restoring the contour and normal function of the mandible more quickly. Panoramic radiograph results two months after the first dredging showed positive bone growth filling the dredging scars. The comparison can be seen with a panoramic radiograph shortly after surgery that appears to be the use of an obturator, which also serves to help accelerate the process of new bone growth.

Imaging findings are characteristic but not pathognomonic, and the diagnosis is classically usually established by histology.[10] Nonetheless, panoramic radiographs that produce characteristics typical of ameloblastoma can accelerate the establishment of an initial diagnosis and determination of treatment plans. Panoramic can show the expansion of the lesion in the cortical direction, and the presence of root resorption. whereas to evaluate buccal and lingual cortical involvement, it is necessary to do an advanced examination through CT or CBCT Scan.

Conclusion

The lesions in the mandibular region were ameloblastomas with a plexiform pattern. Panoramic radiographic examination is an important modality not only to help establish the diagnosis of ameloblastoma but also can be used to evaluate the results of lesion elimination by surgical intervention. Panoramic can show a typical radiolucent pattern, expansion of the lesion in the cortical direction and the presence of root resorption.

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Conflict of Interest

The lauthors report no conflict of interest.

References

1. More C, Tailor M, Patel HJ, et al. Radiographic analysis of ameloblastoma: a retrospective study. Indian J Dent Res 2012;13: 698.
2. Hendra FN, Van-Cann EM, Helder MN, et al. Global incidence and profile of ameloblastoma: a systematic review and meta-analysis. Wiley Oral Diseases 2019: 1-10.
3. Suma MS, Sundaresh KJ, Shruthy R, et al. Ameloblastoma: an aggressive lesion of the mandible. BMJ Case Rep 2013: 1-5.
4. Dias LFT, Vian RLA, Nunes PM, et al. Major considerations on the clinical, epidemiological, histopathological and therapeutic aspects of ameloblastomas: a systematic review. Health Sci J 2019;13: 655.
5. Subash BV, Iyengar AR, Aparna K, et al. Ameloblastoma-a radiographic series: a case study. Kronic Dent Sci 2017;2: 31-39.
6. Wright JM, Soluk-Tekkesin M. Odontogenic tumors: where are in 2017?. J Istanbul Univ Fac Dent 2017;51: 10-30.
7. Soluk-Tekkesin M, Wright JM. The World Health Organization classification of odontogenic lesions: a summary of the changes of the 2017 4th edition. Turk J Pathol 2017: 1-18.
8. Guibert MB, Blay JY, Vazquez L, et al. Persistent response to vemurafenib in metastastic ameloblastoma with BRAF mutation: a case report. J Med Case Rep 2019;13: 1-4.
9. Mariz B, Andrade B, Agostini M, et al. Radiographic estimation of the growth rate of initially underdiagnosed ameloblastomas. Med Oral Patol Oral Cir Bucal 2019;24: 468-472.
10. McClary AC, West RB, McClary AC, et al. Ameloblastoma: a clinical review and trends in management. Eur Arch Otorhinolaryngol 2015.
11. Suma MS, Sundaresh KJ, Shruthy R, et al. Ameloblastoma: an aggressive lesion of the mandible. BMJ Case Rep 2013: 1-5.
12. Vohra FA, Hussain M, Mudassr MS. Ameloblastomas and their management: a review. J Surg Pak (Int) 2009;14: 136-142.
13. Dhanuthai K, Chantarangsu S, Rojanawatsirijev S, et al. Ameloblastoma: a multicentric study. Oral Maxillofac Pathol 2012;113: 782-788.
14. Figueiredo NR, Dinkar AD, Meena M, et al. Ameloblastoma: a clinicoradiographic and histopathologic correlation of 11 cases in Goa during 2008-2012. Contemp Clint Dent 2014;5: 160-165.
15. Figueiredo NR, Meena M, Dinkar DA, et al.Unicystic ameloblastoma presenting as a multilocular radiolucency in the anterior mandible: a case report. JODDD 2015; 9.
16. Ariji Y, Morita M, Katsumata A, et al. Imaging features contributing to the diagnosis of ameloblastomas and keratocystic odontogenic tumours: logistic regression alaysis. Dentomaxillofac Radiol 2011;40: 133-140.
17. Kalaiselvan S, Raja AVD, Saravanan B, et al. Evaluation of safety margin in ameloblastoma of the mandible by surgical, radiological, and histopathological methods: an evidence-bases study. J Pharm Bioallied Sci 2016;Suppl 1: S122-125.